

**Statement of  
Sally Collins  
Associate Chief  
Forest Service  
United States Department of Agriculture**

**Subcommittee on Public Lands and Forests  
Committee on Energy and Natural Resources  
United States Senate**

**October 2, 2001  
Concerning**

**Interaction of Old-Growth Forest Protection Initiatives and Forest  
Service Policy**

Mr. Chairman and members of the Committee, thank you for the opportunity to appear before you today. I am Sally Collins, Associate Chief for the USDA Forest Service. I am accompanied by Dr. Robert Lewis, Deputy Chief for Research and Development. We appreciate the Committee's interest in protection of old-growth on national forest lands. Today, I would like to share with you how, through science, we have defined old growth and its role in the ecosystem. I also want to spend some time discussing our old growth policy nationally and then, finally, focus on examples from the Pacific Northwest.

**General Characteristics**

At the outset, I want to make clear some important aspects of old-growth forests that we have found:

- Many terms are used interchangeably to describe old-growth;
- Old-growth forests are a vital part of a healthy ecosystem;
- Old-growth characteristics vary across different ecosystems; and
- Like other seral stages and forest types, old-growth forests are dynamic forests that do not last forever.

The terminology can sometimes be confusing. Terms such as "*old growth*," "*old forest*," "*late successional*," "*climax forest*," "*ancient forest*," and "*forest primeval*," are often used interchangeably which sometimes leads to confusion in discussions about old-growth. A full discussion of these terms may be found in Appendix A.

The Forest Service has developed specific definitions of old-growth for major forest/community types in all nine regions. In the Southern and Eastern Regions this

significant effort was completed in cooperation with the Nature Conservancy. These are included as an appendix to this testimony.

### **Old growth variability**

Throughout the country there is a great deal of variety in old-growth forests. In the arid west, ponderosa pine grows to large sizes in relatively open park-like conditions. Southern pine forests exhibit similar characteristics. These ecosystems are often dependent on frequent, light-intensity ground fires to thin competing vegetation. Dense canopies of hemlock dominate old hemlock forests of the Northern Rocky Mountains with little vegetation underneath, except hemlock seedlings and scattered shade-tolerant plants such as orchids. Along with this variety, there are numerous wildlife species and communities of species that are associated with mature and old-growth forests. Tree species that dominate old growth are determined by local topography, elevation, soil, climate, geology, ground water conditions, and especially by the disturbance history of the stand and the forest type. In the Eastern U.S., very few acres in old growth conditions exist due to past historic land use practices.

Even forests that are not in a "late successional" stage can exhibit some of the ecological characteristics of old-growth. For example, aspen is short-lived and considered to be an early to mid-successional species. At 50 to 100 years old, aspen forests can be dominated by large trees nearing the end of their life cycle with scattered dead trees both standing and on the ground. Young conifer trees invading the aspen might dominate the vegetation under the canopy. The forests are considered to be in an old-growth condition, even though they are not "climax." While the aspen trees live a relatively short life, the root system--the clone--from which the individual trees grow, can live for thousands of years. When disturbed, such as through a wildfire or logging, the roots sprout new trees to replace those that have died. Absent any disturbance, ecological succession will continue as the aspen trees die, and a conifer forest replaces the clones.

### **Dynamic System**

All forests are in a continuous state of change. Insects, disease, wind, fire, and other natural forces are constantly at work altering the character of the forest. Fire can reset the successional clock by killing understory and overstory and consuming dead material. Variables, such as fire intensity, fire frequency, and fire spread, play a major role in the amount, continuity, and extent of old-growth and other successional stages over time. Similarly, wind and insect activity create gaps or openings in contiguous old-growth forests in which shade intolerant species will establish.

Across the country, many of our old growth forests were established decades or even centuries ago because of some intense disturbance such as a stand-replacing wildfire. Forests in an older, even-aged condition can be self-sustaining for long periods but not permanently. As they continue to progress through their life cycles, many of the oldest trees typically die over a period of time and, absent major disturbance events, are

replaced by shade tolerant understory species. In this way an old-growth Douglas-fir forest may be replaced by an old-growth western red cedar/western hemlock forest.

Human management activities on forests can enhance or detract from old growth characteristics. Similarly, a lack of human management activities does not guarantee that old-growth characteristics will be established or maintained. Some believe that no management other than protection should occur in old-growth. But silvicultural activities have the ability to accelerate the development of the ecological characteristics associated with old and mature forests. They also have the ability to reduce the risk of fire to existing stands of old-growth. By using silvicultural treatments and/or controlled burning in some young, even-aged forests to enhance the development of their large-tree characteristics, the Forest Service is helping to create the ecological conditions associated with old-growth forests. Silvicultural treatments can also reduce the dense understories that have developed under some old growth forests, such as those in the ponderosa pine region, so as to reduce the moisture stress on large trees and the risk of stand-replacing wildfires.

In the West, the area of forest older than 150 years will double to nearly one-third of total forest by 2050. (RPA Assessment 2000) While not all of these forests will have old-growth characteristics, many of them will meet old-growth criteria.

### **Policy**

The Forest Service recognizes the importance of maintaining an array of forest successional stages and conditions. In 1989, the Chief issued a position statement on old-growth. This statement recognized that there are significant values associated with old-growth and that decisions on managing forests to achieve old-growth values would be made during forest plan development. In 1990, the Chief directed Regional Foresters to develop definitions of ecological old-growth. These definitions have been developed for each Region as I mentioned previously. In January 2001, the Chief issued additional direction stating, "Consistent with the direction issued in 1989, we will complete the inventory and mapping of old growth forests based upon the standard definitions and inventories of old growth by forest type and community that are already developed." Inventory and assessment of old-growth is being done on a forest-by-forest basis as forest plans are revised. In addition, Forest Service Manual direction is being developed to guide future revision or amendment of forest plan direction. We are considering the inclusion of the following elements in the directive system to implement the revised forest planning regulations:

- The manner that we will protect, sustain, and enhance existing old-growth forests as an element of ecosystem diversity;
- How we will plan for old-growth within a landscape context;
- Direction to determine the historic extent, pattern, and character of old-growth; and

- How forest plans will project forward in time the amount, location, and patterns of old-growth within the national forest system envisioned under alternative management options.

### **Northwest Forest Plan**

We understand there will be a future hearing before this Committee on the Northwest Forest Plan (NWFP), and we will defer until that time addressing how and whether the plan is working. However, with respect to the topic of this hearing, we thought you might be interested in how the NWFP addresses old-growth.

The 24.5 million acres of federal land covered by the NWFP would provide for a substantial increase in old growth over the long-term. Of the land that is considered capable of growing forests (20.5 million acres), 41 percent was in a medium to large conifer condition in 1994. The NWFP projects a significant increase in medium to large conifer forest over the long-term for the area overall. In addition, the NWFP anticipates that forests of young trees will continuously occupy about 20 to 40 percent of federal lands. There still remains, however, significant disagreement about the extent of old-growth forests in the Northwest prior to European settlement. The amount of old-growth may be more than existed prior to European settlement. For instance, Tom Bonnicksen states in America's Ancient Forest that older Douglas-fir forests covered about 60 percent of the ancient landscape along the Pacific. Elsewhere, young stands in late successional reserves established prior to implementation of the NWFP can be treated through silviculture to accelerate development of ecological conditions associated with mature and late successional forests.

In areas where no timber production is scheduled, nature will continue to regenerate the forest through disturbances, such as wildfire, or the natural life cycles of individual plants. Between 1994 and 2000, approximately 266,700 acres of national forest land in Washington and Oregon within the area of the NWFP burned. From 1995 to 2000, approximately 25,000 to 30,000 acres of national forest land in Washington and Oregon within the area of the NWFP were harvested.

### **Summary**

The Forest Service is committed to maintaining significant areas of old growth. Analysis of this issue and management decisions are guided by national policies and are appropriately handled at the forest and sub-regional level through revisions of our forest land and resource management plans. We will continue to actively manage late successional reserves to speed the development of old-growth characteristics. We look forward to working with this Committee as we move forward on these and other important forest management issues.

This concludes my testimony. I would be glad to answer any questions that you may have.

## APPENDIX A

## DEFINING TERMS

## TESTIMONY OF SALLY COLLINS

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While we have developed definitions for each major forest/community type, there are alternative definitions and terms frequently used in the discussion. These terms often trigger thoughts of the Pacific rain forests with multi-storied forest structures of redwoods or Douglas-fir, a fern-covered forest floor, and large, moss-covered trees decaying on the ground. But this picture does not accurately depict old-growth forests as they exist in other parts of the country.

As we discuss the issues surrounding management of old-growth, I would like to share with you how we have defined these various terms:

*Late successional forest:* A range of forest conditions that develop over time, beginning with stands in which tree crown expansion slows, openings between trees become larger and more stable over time in terms of stand structure, and large, standing dead and fallen trees begin to accumulate.

*Ancient forest:* This is a term used by many that is not science based. It generally refers to forest areas that are relatively undisturbed by human action, ranging in size from a few to hundreds of thousands of acres. These areas may be near, surrounded by, or adjacent to forest areas that have been substantially disturbed or altered by human management. As described by many participants in the discussion of old growth, ancient forests seem to have the following characteristics:

- Largely naturally regenerated;
- Less than 30% of the stand or forest area has been logged within the past century;
- Relatively undisturbed such that human activities have not significantly altered native forest structure, composition, or function;
- Relatively unmanaged, although they may have a history of fire suppression or grazing; and
- Composed of individual trees or stands of trees of different ages, with old-growth components constituting at least half of the stand or forest unit and having at least four trees per acre over 150 years of age.

*Forest primeval; forest from very early times; original forest:* A forest that is estimated to have existed on the planet about 8,000 years ago, before large-scale disturbance by humans began. It should be noted that at the time of European contact, substantial acres of North America's original forest had been

substantially modified by human action, including widespread use of fire and clearing for agriculture in some areas.

*Climax forest*: Last stage of forest succession that can be self perpetuating over time absent any disturbance.

*Old-growth and old forest*: Ecosystems distinguished by old trees and related structural attributes. The characteristics of old-growth will vary considerably based on forest type. For example, the characteristics of Douglas-fir old-growth in western Oregon are considerably different than those of ponderosa pine in eastern Oregon. Pinyon-juniper old-growth characteristics in the Rocky Mountains are very different than that of limber pine in the Intermountain Region. Certainly, these western old-growth forest types are very different than the hardwood forest communities in the East. Old-growth encompasses the later stages of stand development which typically differ from earlier stages in a variety of characteristics that may include tree size, accumulations of large, dead woody material in some forest types, number of canopy layers, species composition, and ecosystem function. The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions, and disturbance regime. For example, old growth in fire-dependent forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, most old growth is typically distinguished from younger growth by several of the following structural attributes:

- Large trees for species and site;
- Wide variation in tree sizes and spacing;
- Accumulations of large, dead, standing and fallen trees (except in forest types characterized by frequent, low intensity fires);
- Decadence in the form of broken or deformed tops or bole and root decay;
- Multiple canopy layers (in some forest types); and
- Canopy gaps and understory patchiness.